



## Visa type and financial strain on depressive symptoms among Filipino migrants to the United States

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### ABSTRACT

Migrants have been theorized to be healthier than their non-migrant counterparts; however, there is limited examination of health selection using binational data and how selection occurs, particularly for mental health outcomes. This study examines the role of visa status and financial strain as critical factors for mental health selection among Filipino migrants to the U.S. and non-migrants who remain in the Philippines. We used the baseline data from the Health of Philippine Emigrants Study (HoPES;  $n = 1631$ ) to compare depressive symptoms between non-migrants and migrants who were both surveyed prior to their departure to the U.S. We assessed depressive symptoms using linear regression by migration status, financial strain, and by visa categories including fiancée/marriage, unlimited family reunification, limited family reunification, and employment. Overall, all migrants reported lower depressive symptoms than non-migrants; however, depressive symptoms varied by visa type. Fiancée/marriage migrants had lower depressive symptoms than compared to limited family reunification migrants. Additionally, those who reported financial strain had higher depressive symptoms than those without any financial strain. We find that migrants were positively selected for mental health using a unique sample of Filipino migrants before they left for the U.S.

### 1. Introduction

Immigrants to the U.S. have been found to be healthier relative to U.S. born natives, otherwise known as the immigrant health advantage (Antecol and Bedard, 2006; Landale et al., 2011; Singh and Hiatt, 2006). This advantage has been observed across multiple physical health outcomes, including self-rated health, body mass index (BMI), and mortality (Abraído-Lanza et al., 2005; Antecol and Bedard, 2006; Singh and Hiatt, 2006). Among several explanations offered for this phenomenon, one perspective has attributed this advantage to behavioral and cultural factors stemming from their country of origin (Kaplan et al., 2004); however, this advantage erodes with duration of residence in their new country (Antecol and Bedard, 2006; Kaplan et al., 2004). Another explanation posits that migrants are typically healthier than their non-migrant counterparts from their country of origin (Feliciano, 2020). However, most of the literature on health selection assessed immigrants' health after arrival in the destination country when selection should be assessed prior to their departure from their home country (Jasso et al.,

2005). Additionally, tests of health selection has examined the health status of foreign-born immigrants to their U.S. born race/ethnicity counterparts or even whites (Antecol and Bedard, 2006; Read et al., 2005). To ascertain whether health selection exists among immigrants to the U.S., the immigrant health literature would be strengthened by studies comparing migrants to their non-migrant counterparts from their country of origin (Ro et al., 2016). Moreover, limited binational data has constrained the ability to undertake such analysis (Feliciano, 2020).

The current study explores mental health selection among migrants from the Philippines to the U.S. compared to non-migrants who remained in the Philippines. The U.S. represents the top destination for migration from the Philippines (Commission on Filipinos Overseas, 2019). Between 2007 and 2017, over 436,000 and 260,000 migrants left the Philippines for the U.S. and Canada, respectively, the two countries with the highest levels to receive Filipino migrants. These migration patterns to the U.S. are due to legacies of colonialism and imperialism. As a former U.S. imperial holding, early streams of Filipino migrants during the 1800s were able to arrive the U.S. with a special status

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(Sabado-Liwag et al., 2022). After the Philippines was granted independence from the U.S. after WWII, many were recruited by the U.S. military or healthcare industry (e.g., nurses). Contemporary migration of Filipino migrants stems from family reunification or employment factors (Morey et al., 2020). Filipino migrants are the fourth largest immigrant population in the U.S. with over 2 million Filipino immigrants in 2018 (Gallardo and Batalova, 2020). The size of the Filipino immigrant population warrants the need for understanding health selection among Filipino migrants to the U.S.

The emerging body of research in health selection has shown mixed findings across countries and health conditions, with no observed global trend of selection across various health outcomes (Feliciano, 2020). Some evidence demonstrates that there is significant health selection between migrants and non-migrants for physical health outcomes including self-rated health and other chronic conditions (Morey et al., 2020; Riosmena et al., 2012; Ro et al., 2016), with stronger selection among higher socioeconomic status immigrants (Akresh and Frank, 2008). Nevertheless, there has been limited evidence of selection for mental health outcomes (Breslau et al., 2011; Gong and Takeuchi, 2014). One study that assessed mental health selection among Mexican migrants and non-migrants found that migrants to the U.S. are more likely to have greater anxiety and worse mental health than those residing in Mexico (Breslau et al., 2011). Researchers have posited that greater migration distance may have stronger effects on health selection as it would take more financial and personal resources and support to migrate than compared to migrants living in countries that are closer to or border the U.S. (Akresh and Frank, 2008; Feliciano, 2020; Jasso et al., 2005). Akresh and Frank (2008) found differences in health selection by geographic area of residence and across countries and specifically, Mexican immigrants were least likely to exhibit health selection. In another study, de Castro and Colleagues (2015) found that Filipino nurses who were intending to migrate to the U.S. had worse mental health outcomes than those residing in the Philippines. This finding may be due to the fact that Filipino nurses seeking employment opportunities abroad (e.g., Canada, U.S.) for greater financial security and improved working conditions (Ronquillo et al., 2011). These aforementioned factors, interlinked with drastic lifestyle and environmental changes from leaving one's home country and navigating new work and cultural conditions may increase psychological stress (de Castro et al., 2015; Ronquillo et al., 2011), and contribute to poor mental health outcomes.

Immigrants may be selected on levels of support and financial resources, while navigating multiple stressors during the migration process (Feliciano, 2020). Stress for many migrants can vary by visa type prior to their departure (Jasso et al., 2005). Several studies have examined differences in health by visa type; suggesting that immigration policies may be a mechanism of selection (Akresh and Frank, 2008; Morey et al., 2020; Ro et al., 2016). Emerging studies demonstrate legal and citizenship status and specifically, non-citizen status, as a key driver for immigrant health outcomes post migration (Gee et al., 2016; Hamilton et al., 2021; Tsuchiya and Demmer, 2021), with very limited examination of how visa status as a non-citizen category impacts health. A novel contribution in this area would be to assess legal status both before and after migration to obtain a greater understanding of immigrant health outcomes (Bacong and Menjivar, 2021), with more attention needed on understanding the relationship between legal status and health before these migrants leave their home country and settle into their new place of destination.

Specifically, there are significant differences in the waiting period by visa type or visa stress, with longer wait times translating into greater levels of stress and as a result, contribute to worse health (Jasso, 2011; Obinna, 2014, 2020). The underlying process of applying for and obtaining immigration visas is stratified based on education, employment, or numerical allocations and thus, may indirectly impact the health of migrants (Jasso, 2011). The U.S. government restricts the number of certain visas ("numerically limited visas") allocated to prospective migrants, which is capped at 7% annually per country (Jasso

et al., 2005; Obinna, 2014). For numerically limited family reunification visas, they are obtained through family-sponsorship of extended family members (Jasso et al., 2005; Obinna, 2014). Immediate relatives of adult U.S. citizens (parents, spouses, children under the age of 18) are exempt from these family visa caps (unlimited family reunification). For employment-based petitioners, the wait time is minimal compared to numerically limited family petitioners where the time ranges from several years to over two decade(s), with wait times differing by sending countries and family classification (Jasso et al., 2005; Morey et al., 2020). Both the number of people waiting in the visa queue and the time in the queue have increased over time (Feliciano, 2020; Obinna, 2014, 2020). Thus, the stressors which stem from the process of obtaining one's visa may vary by visa type among prospective migrants.

When considering visa stratification among migrants from the Philippines, the majority are classified as family reunification migrants (76.9%), followed by those intending to marry a foreign national (21.8%), and employment migrants (1.2%) (Commission on Filipinos Overseas, 2019). Because of its historically high immigration flows, the Philippines is also classified as one of four "visa oversubscribed" countries along with Mexico, China, and India (Obinna, 2014, 2020; U.S. Department of State Bureau of Consular Affairs, 2021). As a result, certain migrants from the Philippines experience disparately long visa processing times relative to other non-oversubscribed countries (e.g., England). For example, for the unmarried Philippine migrant child of a U.S. citizen, it would take at minimum 6 years to file their family-sponsored visa application. While the processing times to obtain these visas are long across countries, they are even longer for those coming from the Philippines (Obinna, 2020), with significant implications for health. Morey and Colleagues (2020) found that among Filipino migrants to the U.S., those with greater visa processing times had significantly greater chronic health conditions, the majority of whom were limited family reunification migrants. These findings demonstrate the need to consider pre-migration processes including visa status stratification, which impacts health selection and in turn, immigrant health outcomes post-migration (Jasso, 2011), with a greater focus on Filipino migrants to the U.S.

Generally, results from empirical research indicate that financial strain as a chronic stressor has adverse implications for mental health among racial and immigrant minority groups (de Castro et al., 2010; Lee et al., 2015; Lincoln, 2007). Immigrants may experience greater levels of financial strain as international migration requires tremendous financial resources for the migrant and their family members (Read et al., 2005). Morey and Colleagues (2020) found that Filipino migrants had lower levels of financial strain than non-migrants, which was also associated with lower chronic health conditions. These Filipino migrants may have lower financial strain as the majority were either employer or family sponsored migrants and thus, have ties with a U.S. citizen family member or their visa sponsor (Jasso et al., 2005). They were most likely financially supported by their sponsor prior to their migration and as a result, were less likely to experience strain. Nevertheless, there is very limited research assessing levels of financial strain among migrants prior to emigration and its impact on mental health.

### 1.1. Current study

The present study, using data from the Health of Philippine Emigrants Study (HoPES), investigates whether there is mental health selection among Filipino migrants compared to non-migrants. Additionally, we assess whether differences in mental health vary by visa petition type among migrants and financial strain among both prospective migrants and non-migrants in the Philippines. HoPES is a unique, binational study (Philippines-USA), which included samples that reflected population proportions and characteristics of recent Filipino migrants in the United States (see Gee et al., 2018 for further details). If health selection is observed among these Filipino migrants, we would expect that all migrants would report better mental health than

their non-migrating peers (Aim 1). We also anticipate differences in mental health by each of the visa status petitioners (Aim 2) and for those who report greater financial strain to have worse mental health than respondents who did not report any financial strain (Aim 3).

## 2. Methods

### 2.1. Data and sample

We used the 2017 baseline wave of HoPES (de Castro et al., 2019; Gee et al., 2018), which included persons of Filipino descent with plans to migrate to the U.S. ( $N = 832$ ) and non-migrant peers ( $N = 805$ ) who intend to remain in the Philippines for at least the three-year period of the study, henceforth “non-migrants.” The non-migrant sample was frequency matched to the migrant cohort by key characteristics of age, sex, and education (de Castro et al., 2019; Gee et al., 2018). This matching was conducted so that the non-migrant cohort represented an ideal comparison group that mirrors the migrant cohort. In other words, non-migrants are intended to represent the migrant group if they had migrated. The response rates were 36.5% and 68.8% for migrants and non-migrants, respectively (de Castro et al., 2019). Though there was a lower response rate for migrants, both groups are representative of recent Filipino migrants to the U.S. (Gee et al., 2018). Data collection occurred in 2017 for both migrants and non-migrants.

*Migrant sample.* Migrants were recruited through a partnership with the Commission on Filipinos Overseas (CFO), or the main governing agency under the Philippines National government in charge of the emigration process (de Castro et al., 2019; Gee et al., 2018). To legally depart the Philippines, the CFO requires that all emigrants to attend a Pre-Departure Orientation Seminar (PDOS) after obtaining their visa to their destination country. The HoPES research team recruited prospective migrants after they completed the PDOS, which provided a rare opportunity to enlist migrants to the U.S., with the majority (90%) of attendees departing shortly (maximum 2 months) after completing the session (de Castro et al., 2019; Gee et al., 2018).

*Non-migrant sample.* Study staff used a stratified random sampling structure of households in Metro Manila, Metro Cebu-urban, and Metro Cebu-rural (de Castro et al., 2019; Gee et al., 2018). Across each stratum, a cluster of sample households were determined across 20 barangays, the smallest municipal administrative level of local governance, similar to U.S. census tracts. Individuals were randomly selected from within each sampled household. Respondents were invited to participate in the study if they met study criteria (plans to remain in the Philippines).

## 3. Measures

### 3.1. Dependent variable

Depressive symptoms were measured using the Patient-Reported Outcomes Measurement Information System (PROMIS) depression item bank, which included a total of 4-items ( $\alpha = 0.82$ ). This PROMIS depression scale has been validated to screen and assess depressive symptoms among the general population (Pilkonis et al., 2014). This scale is considered to be a robust and comparable measure to other depression instruments including the Center for Epidemiological Studies Depression Scale (CESD) and the Patient Health Questionnaire (PHQ-9) (Amtmann et al., 2014; Pilkonis et al., 2014). Participants reported whether in the past 30 days they felt worthless, helpless, depressed, or hopeless. Items scores were summed, with scores ranging from 2 to 20, with a maximum score of 20 for the scale. Follow up sensitivity analyses were conducted to examine patterns using the validated clinical cutoff scores for either mild, moderate, or severe levels of depression from the PROMIS depression item bank. Individuals who scored less than 8 indicated either no depression or within normal thresholds. Scores greater than or equal to 8 indicated mild/moderate/severe depression. Due to the overall distribution with lower proportions of the sample

with moderate or severe depression (10.48%), we used a dichotomous measure combining categories of mild/moderate/severe depression (vs. no depression). Further information regarding the validation and clinical cutoffs of the PROMIS depression item bank are detailed elsewhere (<https://www.healthmeasures.net/score-and-interpret/interpret-score/s/promis/promis-score-cut-points>).

### 3.2. Independent variables

For *migrant status*, those who had plans to migrate and attended PDOS were included in the migrant sample. *Visa status* was obtained from prospective migrants by asking for their visa status code from their immigration documentation. Codes were combined across four categories: fiancée/marriage visa, numerically unlimited family reunification visa (immediate family members), numerically limited family reunification visa (extended family members), and employment visa. Detailed breakdown of these visa status codes are available elsewhere (see Morey et al., 2020). Non-migrants were the reference category for both migrant and visa status measures.

*Financial strain* was measured with one-item asking participants how much difficulty they had paying for expenses relative to the money they have, with responses ranging from “considerable difficulty,” “some difficulty,” “just enough money with no difficulty,” or “enough money with money left over.” This measure has been used to assess financial strain in national surveys among racial minority groups (Lincoln, 2007; Lincoln and Chae, 2010; Tsuchiya et al., 2020). Most respondents reported either “having enough money” (18.76%) or “just enough to pay expenses” (51.32%) and alternatively, a low proportion of participants indicated that they had “some” (24.34%) or “considerable difficulty” (5.58%) in meeting expenses. For the multivariable analysis, we combined categories with those experiencing strain (“some” or “considerable difficulty”) versus no strain (“have enough money to pay expenses” or “having enough money left over”), thus, dichotomizing this financial strain measure.

### 3.3. Covariables

Socio-demographic and health measures that may be associated with financial strain, visa status and depressive symptoms (Morey et al., 2020; Sternthal et al., 2011; Tsuchiya et al., 2020) were included in the analysis. These measures were English proficiency (very well/well or not very well/not at all), marital status (married/living with partner, widowed/divorced/separated, or never married), educational attainment (less than high school, high school graduate, some college, or bachelor’s degree or more), age, gender, and region of residence in the Philippines (Luzon, Visayas, Mindanao) and physical health including self-rated health (Excellent/Very Good/Good or Fair/Poor) and self-reported health conditions. These health conditions included whether respondents had heart disease, high blood pressure, high cholesterol, diabetes, asthma, cancer, influenza, parasitic infection, anemia, and arthritis/gout/rheumatism. To further elaborate, factors that may impact migrant selection are age, which may reflect better health, as well as gender, English proficiency, place of residence, and physical health, all of which may influence the likelihood and opportunities of migration (Gee et al., 2019; Morey et al., 2020).

### 3.4. Statistical analyses

Analyses were conducted using STATA 14.0. Survey weights were used in all analyses to account for different sampling probabilities to obtain effect estimates and standard errors representative of recent Filipino migrants to the U.S. (de Castro et al., 2019; Gee et al., 2018). We calculated descriptive statistics (e.g., chi-squared) of depressive symptoms, financial strain, and socio-demographic factors included in the current study of the HoPES sample at baseline by both migration status and visa status (Table 1). Bivariate analyses were conducted to compare

proportions and *p* values to assess whether if differences between groups (migrant/visa status vs. non-migrant) were statistically significant (*p* < .05).

First, we assessed crude associations using linear regression for each factor separately for financial strain and migration or visa status on depressive symptoms (crude model). We assessed models by examining migration status (Table 2) and visa type (Table 3) separately in multi-variable regression models. This enabled us to test Aims 1 and 2. Model 1 (Tables 2 and 3) assessed each of these critical factors together on depressive symptoms. Model 2 (Tables 2 and 3) was adjusted for critical socio-demographic and health covariables. We conducted pairwise comparisons to assess differences in depressive symptoms by visa type using the postestimation linear combination command (lincom) in STATA 14.0.

Additional sensitivity analyses were performed to assess whether there were differences in results by clinical cutoffs for depression (see Appendix A) by migration status, visa type and financial strain. We examined these associations using logistic regression models and adjusted for socio-demographic and health variables.

#### 4. Results

Table 1 provides descriptive statistics of the critical covariables for the current study. Migrants reported lower depressive symptoms (*M* = 5.27, *SD* = 2.26), compared to non-migrants (*M* = 6.92, *SD* = 3.18). By visa category, employer (*M* = 4.71, *SD* = 1.67) and fiancée/marriage (*M* = 4.81, *SD* = 1.61) migrants reported lower depressive symptoms, while unlimited (*M* = 5.20, *SD* = 2.17) and limited family visa petitioners (*M*

**Table 1**  
Weighted Descriptive statistics by migration status, *N* = 1631.

Variables	Weighted Prevalence: Mean (SD) or weighted%							p‡ Non-migrant versus migrant	p‡ Non-migrant versus visa status
	Full Sample <i>N</i> = 1631	Non- migrants <i>N</i> = 801	All migrants <i>N</i> = 830	Fiancée/ marriage visa <i>N</i> = 232	Unlimited family visa <i>N</i> = 175	Limited family visa <i>N</i> = 361	Employment visa <i>N</i> = 62		
Depressive symptoms	6.08 (2.87)	6.92 (3.18)	5.27 (2.26)	4.81 (1.61)	5.20 (2.17)	5.68 (2.61)	4.71 (1.67)	***	***
Financial strain									
No strain	70.06	57.14	82.55	89.4	84.36	76.23	90.15	***	***
Some/ considerable difficulty	29.99	42.86	17.45	10.60	15.64	23.77	9.85		
English proficiency									
Not at all/ not very well	57.10	75.29	39.50	16.05	51.71	52.10	14.52	***	***
Well/ very well	42.90	24.71	60.50	83.95	48.29	47.90	85.48		
Marital status									
Married/ living with partner	56.09	65.35	47.14	14.93	52.94	59.49	74.38	***	***
Widowed/ divorced	7.37	7.02	7.71	12.69	11.54	4.10	0.00		
Never married	36.54	27.64	45.15	72.37	35.33	36.41	25.62		
Educational attainment									
Less than high school	10.35	12.75	8.02	2.85	19.42	7.03	0.00	***	***
High school diploma	18.59	16.19	20.91	25.27	20.83	21.26	3.15		
Some college	27.62	37.38	18.17	18.86	26.15	16.69	1.51		
Bachelor's degree	43.44	33.68	52.89	53.02	33.60	55.02	95.34		
Age (years)	36.94 (11.49)	37.00 (11.35)	36.88 (11.63)	31.94 (7.77)	41.32 (15.53)	37.75 (10.83)	36.88 (6.98)	ns	*** (fiancée, unlimited family) ns (limited family, employer)
Gender									
Male	33.53	33.55	33.51	6.64	25.88	50.42	52.53	ns	***
Female	66.47	66.45	66.49	93.36	74.12	49.58	47.47		
Island									
Luzon	21.53	0.14	42.23	1.99	44.34	67.14	34.10	***	***
Visayas	45.77	59.01	32.95	76.02	28.67	10.26	23.63		
Mindanao	32.70	40.85	24.82	21.99	26.99	22.60	42.27		
Self-rated health									
Excellent/Very good/Good	54.45	35.38	73.04	84.70	73.95	62.93	88.18	***	***
Fair/Poor	45.55	64.62	26.96	15.26	26.05	37.07	11.82		
Health conditions	1.43 (1.22)	1.50 (1.26)	1.37 (1.17)	0.65 (0.83)	1.53 (1.28)	1.70 (1.11)	1.51 (1.15)	*	** (fiancée limited family) ns (unlimited, employer)

Note:  
 @ *p* < .10,  
 \* *p* < .05,  
 \*\* *p* < .01,  
 \*\*\* *p* < .001, ns = not significant.

= 5.68, SD = 2.61) reported greater symptoms.

Additionally, migrants were less likely to report financial strain than non-migrants. Both employer (9.85%) and fiancée/marriage (10.6%) migrants were less likely to report financial strain than other migrants and non-migrants.

Migrants were more likely to report speaking well/very well (60.5%) compared to non-migrants (24.7%), which was more pronounced among employer (85.48%) and fiancée/marriage migrants (83.95%). Migrants were less likely to be married (47.14%) than non-migrants (65.35%). Employment migrants were more likely to be married (74.38%), followed by limited family (59.49%) and unlimited family reunification migrants (52.94%). As expected, most fiancée/marriage migrants (72.37%) were never married at baseline. Migrants reported higher educational attainment than non-migrants, with employment migrants (95.34%) had at least a bachelor's degree or higher. Unlimited family migrants were more likely to obtain less than a high school degree (19.42%) than non-migrants (12.75%). There were no differences in age ( $M = 37.00$ ,  $SD = 11.63$ ) or gender (33.51% male) by migration status. However, by visa type, fiancée/marriage migrants on average, were younger and unlimited family reunification migrants were older (31.94 and 41.32 years, respectively). Additionally, 6.64% and 25.88% of fiancée/marriage and unlimited family reunification migrants were male, respectively, while approximately half of limited family reunification and employment migrants were male. By region of residence in the Philippines, most non-migrants were from Visayas or Mindanao, while 42.23% of migrants were from Luzon. Additionally, the majority of fiancée/marriage migrants were from Visayas (76.02%) and employment migrants were from Mindanao (42.27%). For physical health, most non-migrants reported fair/poor health (64.62%) and more health conditions ( $M = 1.50$ ,  $SD = 1.26$ ) than migrants. Limited family migrants had more health conditions ( $M = 1.70$ ,  $SD = 1.11$ ) than non-migrants.

Table 2 presents the multivariable regression models of depressive symptoms on migration status and financial strain. In unadjusted analyses, migrants had lower depressive symptoms than non-migrants while those with some or considerable financial strain had greater depressive symptoms than those without strain. These patterns remained significant after controlling for each factor (Model 1). For the fully adjusted model (Model 2), similar relationships were significant, migrants reported lower depressive symptoms ( $b = -1.65$ , 95%CI  $-2.00, -1.29$ ) than non-migrants and those with strain having higher symptoms than those without strain ( $b = 0.74$ , 95%CI  $0.42, 1.06$ ).

Table 3 provides the multivariable analyses by visa type and financial strain. In the crude models (Model 1), fiancée/marriage ( $b = -2.11$ , 95%CI  $-2.41, -1.80$ ), unlimited family ( $b = -1.72$ , 95%CI  $-2.11, -1.34$ ), limited family ( $b = -1.24$ , 95%CI  $-1.59, -0.88$ ), and employment ( $b = -2.21$ , 95%CI  $-2.67, -1.74$ ) migrants, all had lower depressive symptoms than non-migrants. Additionally, fiancée/marriage migrants had lower depressive symptoms than either unlimited ( $b = 0.39$ , 95%CI  $0.02, 0.76$ ) or limited family migrants ( $b = 0.87$ , 95%CI  $0.53, 1.21$ ). Limited family reunification migrants had greater depressive symptoms than unlimited family reunification ( $b = 0.48$ , 95%CI  $0.07, 0.90$ ) and employment migrants ( $b = -0.97$ , 95%CI  $-1.45, -0.48$ ). Those who had high financial strain were more likely to report higher depressive symptoms ( $b = 1.19$ , 95%CI  $0.86, 1.52$ ) than those without any strain.

After adjusting for each of the critical predictors (Model 1), there were noted differences in depressive symptoms across visa categories. All migrants had lower depressive symptoms than non-migrants. Limited family migrants had higher depressive symptoms than other migrants, including fiancée/marriage, unlimited family reunification, and employment migrants. High financial strain was positively associated with depressive symptoms. In the fully adjusted models (Model 2), fiancée/ marriage ( $b = -1.78$ , 95%CI  $-2.21, -1.35$ ), unlimited ( $b = -1.35$ , 95%CI  $-1.81, -0.90$ ) and limited family ( $b = -0.97$ , 95%CI  $-1.44, -0.51$ ), and employment ( $b = -1.31$ , 95%CI  $-1.87, -0.75$ )

**Table 2**

Weighted linear regression of depressive symptoms on financial strain and migration status,  $N = 1631$ .

Variables	Crude		Model 1		Model 2	
	b (SE)	95%CI	b (SE)	95%CI	b (SE)	95%CI
Migration status						
Non-migrant (ref.)	-	-	-	-	-	-
Migrant	-1.65 (0.14)	-1.92, -1.37	-1.46 (0.14)	-1.74, -1.17	-1.65 (0.18)	-2.00, -1.29
Financial strain						
No strain (ref.)	-	-	-	-	-	-
Some/considerable difficulty	1.18 (0.17)	0.86, 1.52	0.75 (0.17)	0.41, 1.08	0.74 (0.16)	0.42, 1.06
English proficiency						
Not very well/ not at all (ref.)					-	-
Well/ very well					-0.21 (0.18)	-0.56, 0.13
Marital status						
Married/ living with partner (ref.)					-	-
Widowed/ divorced					0.82 (0.29)	0.24, 1.39
Never married					0.15 (0.17)	-0.18, 0.49
Educational attainment						
Less than high school (ref.)					-	-
High school diploma					-0.62 (0.28)	-1.16, -0.07
Some college					-0.75 (0.27)	-1.28, -0.22
Bachelor's degree					-1.06 (0.26)	-1.58, -0.54
Age					-0.05 (0.01)	-0.06, -0.03
Gender						
Male (ref.)					-	-
Female					0.24 (0.15)	-0.05, 0.52
Island region						
Luzon (ref.)					-	-
Visayas					-0.90 (0.19)	-1.27, -0.52
Mindanao					-0.49 (0.20)	-0.87, -0.10
Self-rated health						
Excellent/ Very good/ Good (ref.)					-	-
Fair/ Poor					0.46 (0.16)	0.14, 0.79
Health conditions					0.30 (0.07)	0.17, 0.43
Constant			6.60 (0.13)	6.34, 6.86	9.65 (0.45)	8.76, 10.55

Model 1: migration status, financial strain.

Model 2: Model 1+ English proficiency, marital status, education, age, gender, Island region, self-rated health, health conditions.

migrants had lower depressive symptoms than non-migrants. Fiancée/marriage migrants had lower depressive symptoms than limited family migrants ( $b = 0.80$ , 95%CI  $0.37, 1.28$ ). Those with financial strain had higher symptoms ( $b = 0.64$ , 95% CI  $0.32, 0.97$ ) than those without any strain .

**Table 3**  
Weighted linear regression results for depressive symptoms on financial strain and visa status, N = 1631.

Variables	Crude		Model 1		Model 2	
	b (SE)	95%CI	b (SE)	95%CI	b (SE)	95%CI
<b>Visa status</b>						
Non-migrant (ref.)	-	-	-	-	-	-
Fiancée/marriage	-2.11 (0.15)	-2.41, -1.80	-1.88 (0.16)	-2.20, -1.57	-1.78 (0.22)	-2.21, -1.35
Unlimited family reunification	-1.72 (0.20)	-2.11, -1.34	-1.53 (0.20)	-1.93, -1.14	-1.35 (0.23)	-1.81, -0.90
Limited family reunification	-1.24 (0.18)	-1.59, -0.88	-1.11 (0.18)	-1.47, -0.75	-0.97 (0.24)	-1.44, -0.51
Employment	-2.21 (0.23)	-2.67, -1.74	-1.98 (0.24)	-2.45, -1.51	-1.31 (0.28)	-1.87, -0.75
<b>Financial strain</b>						
No strain (ref.)	-	-	-	-	-	-
Some/considerable difficulty	1.19 (0.17)	0.86, 1.52	0.69 (0.17)	0.36, 1.03	0.64 (0.16)	0.32, 0.97
<b>English proficiency</b>						
Not very well/ not at all (ref.)	-	-	-	-	-	-
Well/ very well	-	-	-	-	-0.14 (0.18)	-0.50, 0.21
<b>Marital status</b>						
Married/living with partner (ref.)	-	-	-	-	-	-
Widowed/divorced	-	-	-	-	0.94 (0.29)	0.37, 1.52
Never married	-	-	-	-	0.30 (0.18)	-0.05, 0.65
<b>Educational attainment</b>						
Less than high school (ref.)	-	-	-	-	-	-
High school diploma	-	-	-	-	-0.50 (0.28)	-1.05, 0.06
Some college	-	-	-	-	-0.69 (0.27)	-1.22, -0.15
Bachelor's degree	-	-	-	-	-1.06 (0.27)	-1.59, -0.53
<b>Age</b>						
	-	-	-	-	-0.06 (0.01)	-0.07, -0.04
<b>Gender</b>						
Male (ref.)	-	-	-	-	-	-
Female	-	-	-	-	0.30 (0.15)	0.00, 0.60
<b>Island region</b>						
Luzon (ref.)	-	-	-	-	-	-
Visayas	-	-	-	-	-0.27 (0.22)	-0.71, 0.16
Mindanao	-	-	-	-	-0.15 (0.21)	-0.56, 0.25
<b>Self-rated health</b>						
Excellent/Very good/Good (ref.)	-	-	-	-	-	-
Fair/ Poor	-	-	-	-	0.44 (0.16)	0.12, 0.76
<b>Health conditions</b>						
Constant	-	-	6.62 (0.13)	6.36, 6.88	8.67 (0.50)	7.68, 9.65
<b>Pairwise Comparisons among Visa Types from Regression Models</b>						
	Crude Models		Model 1		Model 2	
	b	95%CI	b	95%CI	b	95%CI

**Table 3 (continued)**

Variables	Crude		Model 1		Model 2	
	b (SE)	95%CI	b (SE)	95%CI	b (SE)	95%CI
<b>To fiancée/marriage</b>						
Unlimited family reunification	0.39	0.02, 0.76	0.35	-0.02, 0.73	0.43	-0.01, 0.87
Limited family reunification	0.87	0.53, 1.21	0.78	0.44, 1.12	0.80	0.37, 1.28
Employment	-0.10	-0.55, 0.35	-0.09	-0.54, 0.35	0.47	-0.06, 1.01
<b>To unlimited family reunification</b>						
Limited family reunification	0.48	0.07, 0.90	0.43	0.01, 0.84	0.37	-0.07, 0.82
Employment	-0.49	-0.99, 0.02	-0.45	-0.96, 0.06	0.04	-0.50, 0.58
<b>To limited family reunification</b>						
Employment	-0.97	-1.45, -0.48	-0.87	-1.36, -0.39	-0.33	-0.82, 0.15

Model 1: visa status, financial strain.

Model 2: Model 1+ English proficiency, marital status, education, age, gender, Island region, self-rated health, health conditions.

Fig. 1 depicts the predicted values (means) for depressive symptoms by visa type, after adjusting for all critical covariables. All migrants had lower depressive symptoms than non-migrants. On average, fiancée/marriage migrants had the lowest levels of symptoms, followed by unlimited family and employment migrants. Limited family migrants appear to higher symptoms on average than fiancée/marriage migrants.

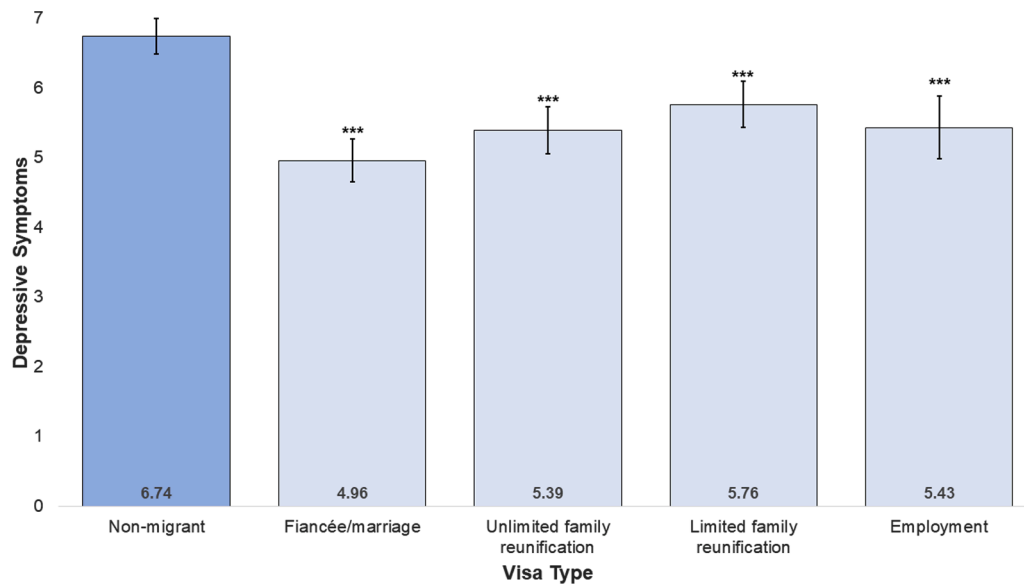
In sensitivity analyses (Appendix A), migrants were less likely to report depression (14.71%) than compared to non-migrants (37.22%). There was variability across depression by visa type, including fiancée/marriage (9.48%), employment (10.60%), and unlimited family migrants (13.35%). Limited family migrants (19.23%) had higher depression levels across all migrants.

When examining depression using logistic regression models by migrant status and financial strain, results were qualitatively similar as compared to the main analysis (Appendix A). In the fully adjusted models, migrants were less likely to report depression (OR 0.30, 95%CI 0.21, 0.44). Those with strain had higher odds of depression (OR 1.59, 95%CI 1.23, 2.06) than those without strain.

By visa type, all migrants were more likely to report lower odds of depression than non-migrants. In the fully adjusted models, fiancée/marriage (OR 0.23, 95%CI 0.13, 0.39), unlimited family (OR 0.27, 95% CI: 0.16, 0.48), limited family (OR 0.38, 95%CI 0.23, 0.64), and employment (OR 0.35, 95%CI 0.15, 0.81) migrants had lower odds of depression than non-migrants. Financial strain was associated with higher odds of depression (OR 1.59, 95%CI 1.21, 2.08) than those without any strain.

## 5. Discussion

Using unique data from the Philippines, we find that migrants prior to their departure for the U.S. exhibit lower depressive symptoms than non-migrants. These results are consistent with the idea that immigrants are selected for better mental health. A notable advancement of our research is that unlike many studies that evaluate selection after migration, we study selection prior to migration among emigrants from the Philippines (Feliciano, 2020). This is important because studies conducted post-migration generally infer selection when the immigrants are healthier than their U.S. born peers. This is an indirect evaluation of



**Fig. 1.** Predicted Values of Depressive Symptoms by Visa Type, Health of Philippine Emigrants Baseline Sample ( $N = 1631$ ).

Note:  $^{\circ}$   $p < .10$ ,  $^*$   $p < .05$ ,  $^{**}$   $p < .01$ ,  $^{***}$   $p < .001$ , ns = not significant. Comparison group: non-migrants.

Models were adjusted for financial strain, English proficiency, marital status, education, age, gender, Island region, self-rated health, health conditions.

selection effects. By comparing persons who are about to emigrate versus their home country peers, we conduct a more direct evaluation of selection. Furthermore, previous research on immigrant selectivity has primarily focused on physical health outcomes (Akresh and Frank, 2008; Feliciano, 2020; Morey et al., 2020; Ro et al., 2016), with limited empirical research on mental health.

We found a positive mental health selection among Filipino migrants which may be due to the notion that migration may increase optimism in becoming reunited with family members or accessing better financial opportunities (Viruell-Fuentes, 2007) and in turn, impact mental health. Among Mexican immigrant women, Viruell-Fuentes (2007) found that despite emergent stressors from the migration experience, these women reported feeling hopeful about better economic opportunities in the U.S. There are some studies, however, that still find migrants have worse mental health compared to non-migrants in their country of origin. For example, Breslau and Colleagues (2011) found that Mexican migrants were more likely to exhibit greater anxiety and mood disorders compared to non-migrants in Mexico. Another study among Filipino nurses found depressive symptoms to be higher among those intending to migrate to the U.S. (de Castro et al., 2015). This may be due to additional stressors and pressures stemming from their occupation and other employment factors that may be unique to this group of migrants. To date, we are not aware of another study which has examined mental health among a sample of migrants from the Philippines to the U.S. The current study provides critical contributions regarding mental health and immigrant selectivity among a representative sample of Filipino migrants to the U.S.

Additionally, we found nuanced differences in depressive symptoms by visa type. Our results suggest that there is positive health selection among migrants (across all visa types) than non-migrants. Fiancée/marriage migrants demonstrated the strongest health selection followed by unlimited family migrants. Fiancée/marriage migrants were younger with high English proficiency, and had higher education while in contrast, unlimited family migrants tended to be older with lower levels of English proficiency and education. Plausible explanations for this include visa processing times. Morey and Colleagues (2020) found across visa types, both fiancée/marriage migrants and unlimited family migrants had the fastest visa processing times compared to other migrants and visa types. Visa processing times may impact depressive symptoms whereby, the longer time to process their visa, this may

contribute to further challenges and delays in their migration and lead to greater levels of stress.

Morey and Colleagues (2020) also found fiancée/marriage migrants had the strongest health selection for physical health conditions among Filipino migrants. In contrast, other researchers have found differences in health selection for self-rated health by visa type. More specifically, there was positive health selection among employment migrants and negative health selection among family-based visas (Akresh and Frank, 2008; Ro et al., 2016). These findings may reflect that fact that there may be different factors (e.g., socio-demographic) that contribute to health selection for physical versus mental health outcomes interlinked with pre-migration conditions and migration processes. Further investigation is needed for understanding of how immigrant selectivity impacts mental health. In support of prior research, our findings indicate that immigration visas are key drivers for *how* health selectivity occurs through opportunities and circumstances intertwined with premigration processes and accordingly, their health (Jasso, 2011; Morey et al., 2020).

Financial strain is a stressor resulting from when one's financial resources do not adequately meet their needs. In support of prior empirical findings, we also find that financial strain is linked to worse mental health (Sternthal et al., 2011; Szanton et al., 2010; Tsuchiya et al., 2020). Financial strain is a robust measure for health among immigrants and including Asian immigrants, even after adjusting for socioeconomic status (income, education; de Castro et al., 2010). Further, this measure is robust for Asian immigrants as many are sending remittances to family members overseas and thus, the reduction in income and potential stressors associated with this may not be adequately captured using an income measure (de Castro et al., 2010). Our results suggest that migrants were less likely to report high levels of financial strain than Filipino non-migrants, with fiancée/marriage and employment migrants reporting lower of strain. Migration requires tremendous financial resources and especially those coming from countries of greater geographic distance, this requires greater resources and thus, impacting migration experiences (Read et al., 2005). Fiancée/marriage migrants are moving to be with their partner in the U.S. and employment visa migrants already have a job secured prior to their migration. Hence, for these migrants their underlying factors for migration may come with greater financial security.

There are a few caveats with the current study to consider. This

analysis uses cross-sectional data and thus, causation cannot be inferred. The results of this study may not be generalizable to other migrants from other countries (e.g., Mexico) as the prior literature has noted mixed findings (Breslau et al., 2011). Despite the low response rate among the migrant sample which may be impacted by sampling bias, both the migrant and non-migrant samples are representative of recent Filipino migrants to the U.S. (Gee et al., 2018), which provides a unique lens in understanding health selection. This study offers novel data that allows examination of mental health selection using a large sample of Filipino migrants to the U.S. A critical extension of this work would be to examine longitudinal mechanisms and across other mental health outcomes (e.g., anxiety, PTSD) as the HoPES study did not include other measures of mental health. Additionally, depressive symptoms is based on self-report and thus, there is potential for underreporting as mental illness is a stigmatized condition in the Philippines (Martinez et al., 2020; Tuliao, 2014). However, Kim and Colleagues (2012) found that self-reported mental health among Filipinos in the U.S. were associated with diagnosed psychiatric disorders, which suggest promising findings in using a self-reported mental health measure. Future research would benefit from testing and validating diagnostic tools for mental health including depression among Filipino adults. We also assessed financial strain using a single item; however, previous research has shown that financial strain is a robust measure in understanding implications for mental health (Tsuchiya et al., 2018) and that financial strain impacts health above and beyond income and education (de Castro et al., 2010; Sternthal et al., 2011; Tsuchiya et al., 2020). Lastly, our study focused on legal migrants and did not include humanitarian migrants including refugees and diversity visa holders. Based on our findings, future research should examine across other visa types and to also disaggregate by employment type as some occupations may undergo a more stressful preparation process (e.g., nurses) prior to their departure and may be linked to mental health. It is also plausible that the migrants in the HoPES study may have greater optimism for migration as demonstrated by previous research (Viruell-Fuentes, 2007), which may potentially explain some of the positive mental health selection. Given that we were not able to assess this in the current study, we invite future studies to consider the inclusion of optimism for mental health selection.

## 6. Conclusion

Moving beyond the immigrant health paradox, greater attention is needed for understanding how health selection contributes to immigrant health and their integration over time. Our study provides novel findings of heterogeneity in mental health selection by visa type and financial strain among Filipino migrants to the U.S. These results also suggest that across migrants there is variability in mental health prior to migration linked to visa stratification and processing times that are enforced by immigration policies. This is significant for understanding immigrant health, as there are key pre-migration mechanisms that contribute to differences in health among immigrants after their arrival in their place of destination. With the exponential growth of Asian populations in the U.S. (Colby and Ortman, 2014) and Filipinos representing one of the largest immigrant populations (Gallardo and Batalova, 2020), understanding key mechanisms that influence their mental health along with processes of integration to U.S. society are increasingly vital.

## Author contributions

Conceptualization, analysis, writing, editing, and supervision, KT, conceptualization, writing, and editing, AMB, conceptualization of parent and current study and editing, GG, conceptualization of parent and current study editing, AbdC.

## Declaration of Competing Interest

The authors declare that they have no known competing financial

interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Supplementary materials

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